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The invention relates to a laser diode with a vertical resonator having a shaper for shaping the beam profile of the laser diode with at least one decoloring absorber in a vertical resonator and to an optical system, in particular a CD player or a data transmission system, with such a laser diode.

Page 2, before the first full paragraph, insert:

--Summary of the Invention:--.

Replace the paragraphs beginning on page 2, line 5, line 8, and line 12, with:

a2 --This object is achieved according to the invention by a laser diode with a vertical resonator having a shaper for shaping the beam profile of the laser diode with at least one decoloring absorber in a vertical resonator.

An important part of the invention is the introduction of a means for beam profiling, the means having at least one absorber means with a decoloring (saturable) absorber.

The at least one decoloring absorber means favors emission of the dominant transverse mode with highest optical intensity (for example transverse fundamental Gaussian mode with its intensity maximum on the axis), since the delocoring of the

a2 conced absorber is at its greatest at the locations of greatest intensity.

Replace the paragraphs beginning at page 5, line 31, to page 6, line 9, with the following:

a3 Other features that are considered as characteristic for the invention are set forth in the appended claims.

Although the invention is illustrated and described herein as embodied in a vertical laser diode with beam profile shaping, it is, nevertheless, not intended to be limited to the details shown because various modifications and structural changes may be made therein without departing from the spirit of the invention and within the scope and range of equivalents of the claims.

The construction and method of operation of the invention, however, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings.

Brief Description of the Drawings:

FIG. 1 is a schematic representation of an embodiment of the vertical laser diode according to the invention; and

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FIG. 2 is a detail of the vertical laser diode according to FIG. 1.

Description of the Preferred Embodiment:

Referring now to the figures of the drawings in detail and first, particularly to FIG. 1 thereof, there is shown a vertical laser diode with an integrated decoloring absorber layer 50 with an absorber means 5 having, as the lowermost layer, an n-doped GaAs substrate 1, which is provided with a GeNiAu contact 10.

Replace the paragraphs beginning at page 8, line 16, with the following:

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In the middle of the series of layers lies the active zone 4, which has three $In_{0.8}Ga_{0.2}As$ quantum films 4a, which are in each case 4 nm wide. The active zone 4 also has 10 nm thick GaAs barriers 4b and on both sides approximately 50 nm thick GaAs boundary layers 4c.

Replace the paragraphs beginning at page 8, line 26, with the following:

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The absorber means 5 has an 8 nm thick [In0.2Ga0.8As] $In_{0.2}Ga_{0.8}As$ quantum film 5 with 10 nm thick GaAs barriers on both sides, which altogether have a doping of $p = 5*10^{17}$ cm^3. In an alternative configuration, the decoloring absorber means 5 may be undoped.

Replace the paragraphs beginning at page 9, line 2, with the following:

ab

-- The $A_{10.3}Ga_{0.7}As$ cladding layer 52 lying over the upper GaAs barrier is p-doped to the same degree as the carrier capture layer 51.--

Page 13, at the top, change the heading "Patent claims" to -- We claim:--.

In the Claims:

Cancel claims 1 to 14 and enter the following new claims: